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Adolescent Risk Behaviors, Screening, and Referral at an Adolescent Health Clinic: A Retrospective Review

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ADOLESCENT RISK BEHAVIORS, SCREENING, AND REFERRAL AT AN ADOLESCENT HEALTH CLINIC: A RETROSPECTIVE REVIEW

Capstone Report

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by

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Dedication

To those along the way; yesterday, today, tomorrow.

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Capstone Report Introduction

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Introduction

This capstone report includes three manuscripts, focused on adolescents in regards to prescribing practices, risk behaviors correlated with depressive symptoms, and risk behavior in a primary health clinic. The first manuscript presents a critical analysis of prescribing trends of antipsychotic medications in youth, especially for behavior control. The second manuscript presents a literature review pertaining to adolescent risk behaviors that may contribute to depression based upon the Centers for Disease Control's (2013) screening recommendations. Based in part upon the literature from these first two manuscripts, a descriptive study was performed which examined risk behavior screening practices and the patterns of behaviors and risk level among patients treated at an adolescent health clinic in the southeastern United States using the PARS screening instrument. Finally, the third manuscript presents results from this study and implications for practice improvement services for depression screening in this at-risk population.

Antipsychotic Use in Children and Adolescents: Analysis of Trends Versus Evidence

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Summer, 2015

Introduction

Antipsychotic medications were developed in the 1950s to treat symptoms associated with psychotic disorders, such as schizophrenia. In the last few decades, these medications have also been approved by the Food and Drug Administration (FDA) to treat other psychiatric disorders in adults such as bipolar disorder, schizoaffective disorder, and as an adjunct medication in treatment resistant major depressive disorder (Elsevier, Gold Standard, Inc., 2013). The older medications, known as typical or first-generation antipsychotics (FGAs), have been effective in treating positive symptoms of schizophrenia such as hallucinations, delusions, aggression, and hostility. Unfortunately, the therapeutic effects of these medications have been inadequate in the treatment of negative symptoms of schizophrenia such as apathy, social isolation and withdrawal, and lack of motivation. In addition, these medications have a high rate of extrapyramidal side (EPS) effects that include dystonic reactions (involuntary spasm or jerking of muscles in the body), akasthisia (the inability to sit still due to involuntary movements, especially in the limbs), drug-induced Parkinsonism, and tardive dyskinesia (involuntary rolling of the tongue and twitching of the face, trunk, and/or limbs).

Atypical, or second-generation antipsychotics (SGAs) were introduced in the 1980s and are similar to the FGAs in reducing psychotic symptoms in patients with psychosis but with fewer and less severe side effects than the FGAs (Lieberman et al., 2005). Although they have proven to be as effective as FGAs in treating the symptoms of psychosis, the atypical antipsychotics have shown to have a higher incidence of metabolic adverse effects and weight gain.

Even with this increased risk for metabolic adverse effects, there are, however, specific SGAs that have been approved for use in the pediatric population for certain disorders, including

irritability with autistic disorders, schizophrenia, and bipolar I disorder with mixed or manic episodes. However, many children are also treated with SGAs for psychiatric illnesses that have no FDA approval; for example, Doey, Handelman, Seabrook and Steele (2007) reported that impulsivity, aggression, obsessive-compulsive disorder, and insomnia were frequently treated off-label with SGAs.

The purpose of this literature review is to identify trends associated with SGA use within the population under the age of 18, as well as prescriber practices, psychiatric conditions associated with SGA use, and safety issues with antipsychotic medication in the pediatric population, specifically in adolescence.

Methods

Search Methods

Literature from 2006 to 2013 was reviewed from searches in PubMed, CINAHL, MEDLINE, and PsychLit with the following search terms: antipsychotics, adolescents, children, youth, English language, published in the last decade, guidelines, prescribing, trends, mental illness, psychosis, aggression, schizophrenia, mood, bipolar, Medicaid, insurance. Studies were limited to those that had included primarily second-generation antipsychotic medication use in persons 18 and under without regard to any specific diagnoses, treatment setting, and without a focus on specific racial/ethnic group or gender.

Search Results

The above databases were searched for abstracts with the key word search terms. The search yielded 17 articles. Ten of these articles were chosen based upon the quality of the study/paper and the authoritative source and were made up of systematic literature reviews, practice parameters, retrospective trend analyses, and cross-sectional studies.

Findings

All of the 10 studies included in this literature review examined the potential for intrinsic safety issues associated with the use of antipsychotic medications in young people. Two studies reviewed the prescribing trends in privately insured children, three studies primarily reviewed trends in publicly insured children and the possible explanations for this development, two were primarily to generate practice parameters, two specifically studied the adverse effects of these medications in young people (although all studies noted this information but in much less detail) and one study reviewed much of this information from the other studies and included more recent data of use across 11 health maintenance organizations. As the availability of inpatient treatment for psychiatric illnesses have substantially decreased, almost all of the studies reviewed were based in a physician office setting: primary care, family practice, or psychiatry.

The patterns of antipsychotic medication prescribing and use are of great importance to professionals who treat the pediatric population; the consequences of not following the best practice guidelines fall mainly on the child, no matter what physician specialty is prescribing the medication. Rettew et al. (2015) found evidence that antipsychotic medications were not necessarily being handed out to treat insignificant behavioral problems, as has been postulated in some of the research, but they found several areas where providers were not following best practice recommendations. One particular discovery they found was that antipsychotic medications were being prescribed following the guidelines only about half of the time and only followed FDA-approved conditions about one-fourth of the time.

Insurance influence on prescribing trends

The frequency of psychotropic medication prescribing has increased in the last 2 decades, particularly with antipsychotic medications. According to Zito, Burcu, Ibe, Safer, and Magder

(2013), antipsychotic use in youth within the Medicaid population has dramatically risen in conjunction with the overall increase found in adolescents. Many reasons have been hypothesized for the increase in rates, especially in the public insurance sector. For example, higher poverty rates among those insured by Medicaid have been associated with reduced access to comprehensive services; this has led the demand for more rapid symptom stabilization for behavioral problems in children. In addition, a greater frequency of psychiatric conditions and behavior disorders are diagnosed in children who are insured by Medicaid, decreased provider reimbursement for thorough and time consuming mental health assessments, and pressure from stressed families may make antipsychotic medications a more attractive option for treatment (Zito, Burcu, Ibe, Safer, & Magder, 2013; Pathak, West, Martin, Helm, & Henderson, 2010; Harrison, Cluxton-Keller, & Gross, 2012).

Changes in prescribing patterns can be attributed in part to: scientific advances in antipsychotic medications from FGAs to SGAs (each with a different side effect profile); FDA approval for certain SGAs in the diagnosis of bipolar disorder, schizophrenia, and autism spectrum disorder in young people; an increase in the Hispanic population; and increased coverage for the children's insurance program in each of the state's Children's Health Insurance Program (SCHIP). For example, Zito et al. (2013) identified the predominant clinical and demographic characteristics of youth who had the highest rates of antipsychotic use. These included the youth who were more family income level eligible (qualified for state and federal assistance like SCHIP) over youth who were considered vulnerable (who were in the foster care system or received Supplemental Security Income [SSI] for a disability). In addition, very young children (ages 2 to 4 years, even though no FDA approved disorders for the use of SGAs exist for this age group) showed an increase in use similar to youth ages 10 to 17, and the greatest

proportionate youth increases were in the Hispanic population. Externalizing behavior disorders were more frequently treated with antipsychotic medications compared to diagnoses of schizophrenia, psychosis, or other severe conditions of development.

The use of antipsychotics for treatment of behavioral issues greatly exceeded that of treatment for psychotic disorders. Pathak, West, Martin, Helm, and Henderson (2010) came to similar conclusions in their study. In looking at the Arkansas Medicaid program during the years 2001-2005, they found that the number of children treated for the first time with SGAs increased from 1,482 to 3,110 during the duration under study. Overall, almost half of the youth who received a SGA in these studies had no supporting diagnosis to justify the use of these medications; over half of this number of antipsychotic use was for attention-deficit hyperactivity disorder (ADHD)—a condition that has not been approved by the FDA for treatment with antipsychotic medications (U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality [AHRQ], 2013). Interestingly, the majority of providers who prescribe antipsychotic medications to pediatric patients for non-FDA approved off-label use in the outpatient setting are psychiatrists (64.1%) followed by pediatricians (9.5%), nurse practitioners (7.7%), unspecified (6.3%), general practice/family medicine (4.9%), and all others (7.4%) (Chai, Mehta, Moeny, & Governale, 2013).

In office-based settings, Olfson, Blanco, Liu, Moreno, and Gonzalo in 2006 found that antipsychotic medications were prescribed more often for young people on Medicaid more so over young people covered under private insurance, possibly due to the effect of higher mental health disabilities and foster children being insured through Medicaid (Fortuna, Fulwiler, Stone, Smith, & Biebel, 2008). But a later study by Olfson, Blanco, Liu, Wang, and Correll (2012) noted continued increases of antipsychotic use in youth across the board, regardless of the pay

source (although publicly insured youth continued to have the most antipsychotic medication management visits); males diagnosed with a disruptive behavior disorder had a majority of these visits. Notably, for the years 2005-2009, the authors found the bulk of the antipsychotic medications prescribed were for a disruptive behavior disorder diagnosis; the FDA has not approved treatment for these disorders with an antipsychotic medication. Likewise, they found that a diagnosis of bipolar disorder in youth was a common reason for prescribing these medications, even more so than for adults, yet diagnosing bipolar disorder in youth is not an accurate science.

These trends are not relegated solely to the publicly insured youth. In a study of privately insured, very young children (ages 2 through 5) during the years 1999-2001 and 2007, Olfson, Crystal, Huang, and Gerhard (2010) noted that the overall amount of psychotropic medications prescribed to this age group did not differ much in the two time periods under study, but the types of psychotropic medications filled differed significantly with the greatest increase in antipsychotic medications. Males were more commonly treated with antipsychotic medications, and the most common diagnosis for antipsychotic use was bipolar disorder (as was discovered by the authors again at a later date). Olfson et al.'s (2010) final assessment concluded that the majority of these very young privately insured children who were treated with an antipsychotic medication did not receive the most rudimentary mental health services during this time period such as a thorough mental health assessment, any type of psychotherapy, or a consult with a psychiatrist. This may be due to lack of treatment access. Repeatedly, these studies noted that aggressive behaviors seem to be the end point that antipsychotic medications are being targeted for in off-label use among patients under 18 years of age.

Conditions treated with antipsychotics

Olfson et al. (2012) noted that a possible explanation for the increase in antipsychotic prescribing in younger people was the FDA approval for certain medications to treat the following conditions in youth: bipolar disorder, schizophrenia, and irritability associated with an autistic spectrum disorder as well as certain published clinical trials and practice guidelines for use in unapproved conditions. Researchers examining the use of antipsychotics in children with these approved diagnoses found that improvements in the symptoms of irritability, self-injurious behavior, aggression, and tantrums associated with Autism Spectrum Disorder (ASD) are significant, especially with the SGA risperidone (Aman et al., 2008; Pandina, Bossie, Youssef, Zhu, & Dunbar, 2007; Harrison, Cluxton-Keller, & Gross, 2011). In addition, Risperidone is approved treatment for schizophrenia and bipolar disorders in adolescents; aripiprazole was later approved for treatment of schizophrenia and bipolar I disorder in children ages 10-17 (Pathak et al., 2008; Crowley et al., 2014).

Bipolar disorder and autism spectrum disorder diagnoses have increased markedly in youth over the past decade, and along with the lower EPS risks with SGAs over FGAs, FDA approval for use with certain conditions, and the overall level of increased prescriber comfort with these medications probably account for some of the increases in antipsychotic use. Pathak et al. (2008) also brought up other plausible reasons for the upsurge: the rise in behavioral managed care alongside strictly limited reimbursement for psychotherapy leading toward a greater use of pharmacological interventions; mental health treatment stigma may be to a lesser degree; and a greater acceptance of psychotropic medications in the general population as pharmaceutical manufacturers use intense marketing to consumers. Harrison, Cluxton-Keller, and Gross (2011) and James (2010) proposed similar possible reasons for the increased

antipsychotic use in children, especially for off-label treatment. These include the acceptance of psychotropic medication use in the pediatric population, limited access and inadequate supply of mental health professionals to treat this population, demand for rapid treatment that is affordable (unlike therapy which can take multiple visits and cost more than what a family can afford), limited provider time and reimbursement issues for treating behavioral problems (without medications), and the options for treatment in vulnerable populations that have limited resources and access to care.

The American Academy of Child and Adolescent Psychiatry (AACAP, 2011) found that antipsychotic prescribing has dramatically increased in the last 17 years, especially for mood disorders and by non-psychiatrist physicians, and they noted off –label use for antipsychotics (particularly SGAs) have been a major influence on the prescribing of these medications to youth, even without FDA approval. Currently, the FDA approved conditions for antipsychotic use in minors are schizophrenia, bipolar I disorder (manic or mixed), and irritability found with autism; the medications approved for these conditions are: aripiprazole, olanzapine, paliperidone, quetiapine, and risperidone (FDA, 2013). Of these, risperidone and aripiprazole are the only medications approved for use in ASD in youth ages 5-11. The Centers for Medicare and Medicaid Services (CMS) report, "More than three-fourths of youths on Medicaid are taking one of these [atypical antipsychotics] medications for an indication that is not FDA approved" (U.S. Department of Health and Human Services, AHRQ, CMS, pg. 2, 2013). Supporting the CMS report, Pathak et al. found in their study, 41.3% of new users of antipsychotic medications (SGAs) under the age of 18 were for a diagnosis not approved by the FDA; Penfold et al. (2013) also discovered that the majority of children on antipsychotic medications did not have one of the approved conditions for use. Interestingly, in the European Union countries aripiprazole is

the only approved antipsychotic medication for youth ages 15-17 who have schizophrenia, although a few countries also have the approval for use of risperidone for severe disruptive disorders in children and adolescents (Findling et al., 2008). The use of these medications is not without great risks to the child such as weight gain, cardiometabolic effects, and the unknown long-term effects of use on a child's growth and brain development.

Safety

Antipsychotic medications, especially the newer SGAs, have unfortunately contributed to the pervasiveness of obesity in the medicated schizophrenic population; current estimates range from 40 to 60% versus 30% of the general adult population (Sokal et al., 2004). In addition, use of the SGAs increases the risk of acquiring or exacerbating type II diabetes, especially in female youth (Nielsen et al., 2014; Cohen, Bonnot, Bodeau, et al., 2012). SGAs can cause a substantial amount of weight gain as well as an increased risk for metabolic changes; each medication has varied levels of these effects. Aripiprazole has a higher percentage of EPS related effects in youth over adults and is not indicated as a monotherapy treatment for major depressive disorder (Nielsen et al., 2014). In addition, treatment with aripiprazole is associated with increased suicidal ideation among people under the age of 24 (U.S. Department of Health and Human Services, AHRQ, CMS, 2013). Many adverse effects have been observed with the use of SGAs among the child and adolescent population including weight gain and hyperlipidemia in adolescents taking olanzapine, increased metabolic effects with paliperidone, blood pressure increases associated with quetiapine, and weight gain with risperidone (Panagiotopoulos, Ronsley, Elbe, Davidson, & Smith, 2010; Correll, & Kratochvil, 2011; Cohen, Bonnot, & Bodeau, 2012).

De Hert, Dobbelaer, Sheridan, Cohen, and Correll (2011) conducted a systematic review of randomized controlled trials (RCT) with SGAs to investigate the adverse metabolic effects of these medications in the under age 18 population. They reviewed 31 RCTs that included 3,595 patients in the pediatric population. This review indicated that youth under age 18 had a much greater risk of hyperprolactinemia, weight gain, and other metabolic disturbances resulting from treatment with SGAs. In their study, ziprasidone had the lowest risk for weight gain; aripiprazole, quetiapine and risperidone showed moderate amounts of weight gain; and olanzapine showed the most weight gain effects. This weight gain also tended to be in younger patients with ASD who had no prior experience with SGA treatment. Seida et al. (2011) conducted an extensive systematic literature review to investigate safety and efficacy of FGAs and SGAs in youth under 24 years of age. They too found that olanzapine caused more dyslipidemia and weight gain, but fewer prolactin-related events than risperidone; olanzapine caused more weight gain than quetiapine.

Children may suffer different and/or more serious side effects than adults from taking antipsychotic medications. Different rates of absorption and distribution within the tissues and cells exist due to the relative mass of the liver and kidneys (when adjusted for weight), and children's bodies have more water and less fat compared to adults. This could potentially be a contributing factor for higher risk of metabolic adverse effects among youth treated with SGAs compared to those experienced by adults. It is imperative that safe-dose range limits are established and disseminated in practice guidelines. This prompts and supports the need for baseline measures recorded for every child who is prescribed antipsychotic medications and continued monitoring for the duration of treatment.

Discussion

The objective of this literature review was to identify trends in the use of antipsychotic medications in children and adolescents. Based upon the literature critically appraised for this paper, findings indicate an increasing trend in the prescribing of antipsychotic medications in young people (specifically SGAs) by many providers, some not specialized in psychiatry or mental health. This clinical problem is heightened when considering that the FDA has not approved the use of these medications for several of these illnesses. Disruptive, aggressive, oppositional, and other behaviors that do not respond to parental controls appear to be a common reason for providers choosing this route of treatment. A small number of SGAs are approved to treat some psychiatric conditions in young children and adolescents, but most of the children on the medications in the reviewed studies did not have one of the approved diagnoses. The main concern for using these medications in young people is their increased risk of experiencing adverse side effects such as weight gain and/or metabolic changes; these could have devastating consequences for health into adulthood. A major concern is that these are just the adverse effects that have been studied—no long-term data exists for the effect these medications could have on growth and brain development.

Implications

Important concerns that need to be addressed in future research include strategies to improve access to psychosocial treatments with qualified providers, the urgent need for high quality studies to determine the efficacy and safety of off label use of antipsychotic medications, and standardization for outcome measurements for the purpose of ascertaining clinically important outcomes and the degree to which changes in symptoms and functioning are significant. Telemedicine psychiatry may be a viable option to improve accessibility in areas

where pediatric psychiatrists or collaborative physicians are limited. Additional studies are needed to examine the dose-related effects of the different medications on weight gain, metabolic adverse effects (dyslipidemia, glucose, prolactin, blood pressure, liver function) in addition to health-related quality of life, social functioning, and the effects on the involvement in the legal system (Harrison, Cluxton-Keller, & Gross, 2012; Seida, et al., 2012; De Hert, et al., 2011). A 2012 AHRQ study of FGAs and SGAs in children and adolescents concluded that further research was needed the most in three categories including long-term outcomes for effectiveness, long-term risks of medication use, and differences in efficacy, effectiveness, or incidence of adverse effects in the various subpopulations of young people who take antipsychotic medications.

Further Implications

In addition to the need for increased standardization of off-label use of antipsychotic medications and increasing access to other psychotherapeutic modalities of treatment, other therapeutic parameters must be investigated. Some of the areas of treatment that need further study include determining the numbers of very young children unnecessarily diagnosed with psychiatric disorders, such as bipolar, and needlessly prescribed antipsychotic medications and safety issues among children prescribed several psychotropic medications simultaneously. Comprehensive psychiatric assessment must be performed before starting any psychotropic medication in a young person in order to arrive at a precise decision for the best treatment.

For the child's safety, non-pharmacological interventions should always be utilized as a first line of treatment including such interventions as parental skills training and support when indicated. Many behavioral problems in children are often strongly associated with problematic family relationships and stressful home environments; medications cannot fix these core

problems. Adequate provider training for use of these medications should also be a priority. As a best practice, primary care providers should collaborate with psychiatrists or psychiatric nurse practitioners before prescribing psychotropic medications. However, the collaboration between primary care and mental health professionals rarely occurs (Wissow et al., 2013). To address this treatment barrier, some states have created monitoring oversight for collaboration between pediatricians, primary care providers, and specialists in child psychiatry (Medicaid Medical Directors Learning Network & Rutgers Center for Education and Research on Mental Health Therapeutics, 2010). Some states have started implementing strict monitoring for the use of psychotropic medications in children, especially antipsychotics, in the Medicaid population (Colorado Department of Health Care Policy and Financing, Colorado Department of Human Services, 2013). These programs are a step forward in ensuring the safety of our children.

Conclusion

The trend in the use of antipsychotic medication in young people has increased dramatically over the last 15 years, many prescribing practices without the benefit of psychiatric specialty collaboration or for FDA-approved conditions. The publicly insured youth have the highest use of these medications but increases in privately insured have also been noted. Antipsychotic medication can have serious adverse effects on youth; more so than on adults, and this outcome can be found in most of the literature published regarding antipsychotic use among children. However, these studies are limited, and the long-term effects on children have not been fully examined.

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Evaluating Risk-Behavior Screening for Identifying Adolescent Depression:

A Literature Review

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Abstract

Title: Evaluating risk-behavior screening for identifying adolescent depression: a literature review

Aim: The purpose of this literature review is to analyze and present recommendations regarding the identification of adolescent depression from the 2013 Centers for Disease Control recommended behavior domains on risk screening instruments.

Background: Over 2 million youth report a major depressive episode yet 60% of these youth did not receive any kind of treatment. Depression is consistently the highest risk factor for adolescent suicide. Depression screening has been recommended for primary care and risk-behavior instruments are commonly used. Domains other than the "mental health" domains on these instruments may indicate depression as well and need to be taken into consideration when assessing for adolescent depression in primary care.

Design: Integrative literature review

Method: MEDLINE, The Cochrane Library, PubMed, PsychINFO, and CINAHL databases were searched for studies from search terms: adolescents, high-risk behavior, youth, screening, depression, correlates, primary care, smoking, substance use, predictors and depression, domains, assessment, behavior and emotional disorders, mental health, teenagers. The literature on this topic is limited. Most of the 8 studies narrowed down for inclusion in this review were of a cross-sectional design.

Results: Identified factors potentially associated with adolescent depression include cigarette smoking, the environment surrounding school/academics, stress associated with worries about the family stability, gender differences on prevalence of depression, and attitude/perceptions from a negative cognition.

Implications: Although few high quality studies were available, the identified factors noted are included in the domains of risk-behavior screening instruments. These should be taken into consideration as possible indicators for the presence of depression when triggered and the youth should be assessed for need of further evaluation.

Depressive symptoms were reported by 2.2 million youth ages 12-17 in the United States in 2012; sixty percent did not receive any kind of treatment (Substance Abuse Mental Health Services Administration [SAMHSA], 2012). Depression is consistently the most common risk factor for adolescent suicide, which has been the 3rd leading cause of death for teens for many years (Gould, Shaffer, & Greenberg, 2003; the Centers for Disease Control [CDC], 2012). In 2009 the US Preventive Services Task Force (USPSTF) recommended screening for adolescent depression in primary care, but levels of depression screening in primary care have been suboptimal (Irwin, Adams, Park, & Newacheck, 2009).

Risk behavior assessment tools have also been recommended to screen for depression in adolescents in primary care (CDC, 2013; The National Institute of Health Care Management [NIHCM], 2010). Several screening tools are available for clinicians in the assessment of risk factors associated with depression in youth. For example, Salerno and Barnhart (2014) evaluated the 21-item Rapid Assessment for Adolescent Preventive Services (RAAPS) for utility in identifying adolescent depression in primary care services compared with the Patient Health Questionnaire-Adolescent (PHQ-9), considered the "gold standard" for depression screening in primary care; the RAAPS was shown to be a valid and reliable measure of adolescent depression and has been recommended by the USPSTF (2009). However, the currently available tools have shown wide variations in the inclusion of relevant assessment domains that could alert the clinician to the need for further evaluation and referral for depression, and provider interpretation on the need for further evaluation can vary depending on the screening tool used in the assessment. The purpose of this literature review is to analyze, identify, and propose alternative behavior characteristics to assess for adolescent depression from the CDC (2013) recommended behavior domains on risk screening instruments.

Background

The goal for adolescent depression screening is to increase rates of identification of depression and implement early interventions such as referral, more in-depth screening, treatment, and follow-up. Ultimately, earlier interventions may decrease the risk of negative life outcomes that can take place when depression is not identified and treated (USPSTF, 2009). Depression screening has been shown to be effective at identifying depression in adolescents leading the USPSTF to make several screening recommendations in 2009. However, these tools are specific to depression and as such, are infrequently offered to adolescent patients in the primary care setting because providers report time and training as barriers in their screening practices (Irwin et al., 2009; Olson et al., 2001).

Risk behavior screening may be a more practical approach and can yield much information about the overall health of an adolescent. The CDC (2013) has identified several risk behaviors for morbidity and mortality in adolescents and recommended evidence-based risk screening for these behaviors, or domains, in the primary care setting. These risk behaviors include unintentional injuries; presence of violence/aggression; mental health issues; tobacco use; use of alcohol and other drugs; sexual behaviors contributing to unintended pregnancy, sexually transmitted infections (STIs) and HIV; unhealthy dietary behaviors and lack of physical activity. A number of protective factors have also been identified such as social support, life goals, and/or a trusting relationship with an adult (Michigan Quality Improvement Consortium [MQIC], 2013). Engagement in risky behaviors can greatly affect the present and future mental health of an adolescent, and these behaviors are evident in adolescents with depressive symptoms much more than those without depressive symptoms thus raising their risk for further mental illness (Institute of Medicine [IOM] and National Research Council Committee on the Science of

Adolescence, 2011; Waller et al., 2006). Since 2013, the MQIC, along with the Agency for Healthcare Research and Quality (AHRQ), have recommended that adolescent risk behavior screening should be performed at least annually with a validated screening tool. There is a lack of systematic evidence-based guidelines for the identification of potential depression as determined via a risk assessment-screening instrument. However, evidence-based studies have identified risk behaviors associated with an increased risk for depression (IOM and National Research Council Committee on the Science of Adolescence, 2011; Forman & Davies, 2003; Haarasilta, Marttunen, Kaprio, & Aro, 2004; Richmond, Mermelstein, & Metzer, 2012), but limited data exist to connect those known risk factors with their correlated domains on a risk screening instrument.

Methods

Search Methods

The MEDLINE, Cochrane Library, PubMed, PsychINFO, and CINAHL databases were searched for studies using the following search terms: adolescents, youth, high-risk behavior, screening, depression, correlates, primary care, smoking, substance use, predictors and depression, domains, assessment, behavior and emotional disorders, and mental health. Most studies were of a cross-sectional design as the literature was limited.

Inclusion criteria for the studies in this review were: (a.) males, females, or mixed gender between the ages of 12-21 years; (b.) all races and ethnicities; studies written in the English language; (c.) settings to include primary care, pediatrician offices, schools, or outpatient settings; (d.) the use of screening/assessment tools for their study with measures to include depression/depressive symptoms along with other areas of behavior and/or emotion; (e.) outcome of study is associated with depression (connection or note to other domain areas); and (f.) studies

within the last decade. Included studies did not require a formal diagnosis of depression among the participants, but they did need to identify the presence of depressive symptoms. Exclusion criteria included (a.) a focus on participants who dropped out of school, (b.) juveniles in the justice system, (c.) incarcerated youth, (d.) adolescents in substance abuse treatment, and (e.) institutionalized youth. Studies that included only college attendees, focused on a specific racial/ethnic group, or concerned primarily with adult outcomes were also excluded.

Search Results

The databases were searched for abstracts meeting the key word search terms. Initially, 38 studies met the inclusion criteria of which 22 were eliminated with the exclusion criteria. Sixteen studies remained. No randomized controlled trial (RCT) studies met the inclusion criteria for this literature review.

Findings

Of the 16 studies included in this literature review several evaluated early identification of potential depression in adolescence in primary care and adolescent risk screenings/tools (Salerno and Barnhart, 2014; NIHCM, 2010; American College of Preventive Medicine [ACPM], 2011). Three studies reviewed the relevance of the school environment on behaviors contributing to adolescent depression (Haarasilta et al., 2004; Richmond, Mermelstein, & Metzger, 2012; Respress, Morris, Lewin, & Francis, 2013), two studies examined the interpersonal relationship factors (Yaroslavsky, Pettit, Lewinsohm, Seeley, & Roberts, 2013; Dumont & Olson, 2012), three studies considered the characteristics of the individual in relation to depression (Dumont & Olson, 2012; Rood, Roelofs, Bogels, & Meesters, 2012; Rockhill, et al., 2013), and several looked at gender as a potential mediating factor and the specific behaviors

related to gender (Seeley, Stice, & Rohde, 2009; Waller et al., 2006; Rubin, Gold, & Primack, 2009).

Several themes emerged from this review, and some aspects of one theme may converge with another theme. The predominant themes included specific environmental influences potentially influencing the development of depression, interpersonal relationships and individual characteristics and vulnerability for depression; the role of gender and gender specific behaviors also emerged as a theme suggesting increased risk for depression. Most of the studies mentioned differences in presenting complaints and/or symptoms between adolescents and adults. The themes are of great importance in linking various risk behaviors to potential adolescent depression especially for the behaviors unknowingly connected to depression.

Influence of peers/school environment

Healthcare providers have a widespread knowledge base on the risk factors for depression in adolescents, mainly due to treatment guidelines developed by various expert organizations (IOM and National Research Council Committee on the Science of Adolescence, 2011; NIHCM, 2010; USPSTF, 2009; ACPM, 2011). The evidence base indicates that a history of depression, mental or medical comorbidity, substance use, history of trauma, and many other factors increase the risk of developing mental health issues (IOM and National Research Council Committee on the Science of Adolescence, 2011). Other more subtle factors may also influence the development or presence of depression. For example, peers and friends at school are extremely important to an adolescent for a multitude of reasons. Adolescence is a vulnerable time period in a child's social development, and peer rejection may lead to gravitation towards deviant peers to decrease a sense of isolation. The choice of peers can have a "domino effect" for behaviors that are associated with depression such as drug use, delinquency, and other high-

risk behaviors (Haarasilta et al., 2004; Richmond, Mermelstein, & Metzger, 2012; Respress et al., 2013).

The influence of negative peer interactions greatly increases an adolescent's risk for depression over time. Richmond, Mermelstein, and Metzer (2012) conducted a 24-month longitudinal study to examine the risk and protective factors associated with deviant and non-deviant peers in high school students. Deviant behaviors are defined as behaviors being outside of the accepted cultural norm for a group or society such as drug use, promiscuity, and delinquency for example [Merriam-Webster, 2015]. Richmond and colleagues found that protective factors of non-deviant friendships decreased the risks associated with the influence of deviant peers with regards to cigarette smoking and alcohol use, but had no reduction effect on depressive symptoms. The findings suggest a negative impact associated with peers, specifically on depressive symptoms. Negative peer interactions are noted to be the most consistent factor in ongoing depression symptoms in adolescents and are generally related to the influences on behaviors that peers exert, especially with alcohol and substance use in both genders (Huang et al., 2014; Herres, & Kobak, 2014; Pesola et al., 2015). As noted above, alcohol and substance use is linked with an increased risk for depression in adolescents.

The actual school environment (or lack thereof) seems to have a strong influence on the potential risk for depression as the stress of academic and social pressure is increased. Haarasilta, Marttunen, Kaprio, and Aro (2004) found that adolescents, especially between the ages of 15-17, were more apt to experience a major depressive episode if they smoked cigarettes, had chronic medical conditions, and/or did not work or attend school at the time of the study. The school environment and poor school functioning has been associated with depression in the influential factors of academic performance, the perception of prejudice/discrimination by peers

and/or teachers, and socioeconomic status (Respress et al., 2013; Seeley, Stice, & Rohde, 2009). Interestingly, the perception of peer prejudice and teacher discrimination was significantly related to depressive symptoms with the teacher as a much stronger influence than the peers (although this finding was mostly in whites and minorities and not with blacks); parental education and neighborhood poverty had a more powerful influence with black adolescents.

School performance has also been linked to depressive symptoms; Respress et al. (2013) found that low GPA (grade point average) scores were strongly associated with depressive symptoms for all racial groups. Perception of discrimination in the school setting was an additional predictor for depression in this study. Wanner, Morin, and Vitaro (2005) found that the risk for a depression trajectory was much higher for girls with a greater level of a reactionary temperament who were rejected by their same sex peers. This contrasts the earlier theme of negative peer influence even though the outcome is similar; rejection is more of a behavior dictated by others while a negative peer influence involves behaviors that are controlled by the individual based upon the peer influence (although this vulnerability may stem from peer rejection initially). The school environment can have a robust impact on a youth's health both positively and negatively. Negatively, this may occur when a teen feels discriminated against by classmates and teachers; teachers are supposed to be accepting of all kids and have a huge influence on academic performance. Thus, a perceived relational instability can lead to associating with peers who may also feel shunned and who display acting out/risky behaviors, potentially leading the teen to start smoking and drinking. If the teen has the ability to make friends who are not of the risk-taking circles those friends may be able to help offset the influence of the shunned group.

Family factors

The effects of a dysfunctional school environment and/or peer influences are not the only possible predictors for the onset or course history of depressive symptomology in adolescents. It is well known that adolescents who experience parental conflict are at a greater risk for depression (Connell & Dishion, 2008). Parental influence on adolescent depression is not relegated solely to conflict, however. Ideally, the family serves as a source of stability during a tumultuous time in the life of a young person, and if a teen does not perceive that the family as whole functions on a stable and secure level then the teen has a difficult time obtaining the emotional permanence needed for self-efficacy. Lack of parental support and stability can shake the foundation of an adolescent's identity of self with a negative impact on overall social functioning through the lifespan. This insecurity and instability appear to have a profound influence on a youth's emotional well-being. Dumont and Olson (2012) studied somatic and emotional predictors for depression in primary care and found significant associations with stress, anger, and worries about family substance use on positive depression screens. An adolescent's perception of family security regarding the future and the ability to give support could influence the increase or decrease in depressive symptoms, especially in the area of financial concerns; this factor especially affects adolescent females (Forman, & Davies, 2003; IOM, 2011; Seeley, Stice, & Rohde, 2009).

Gender

The mechanism by which risk behaviors affect girls seems to be different than in boys, resulting in a wide variety of outcomes between the two genders. This divide includes the majority of risky behaviors in which this population engages: BMI and body image, substance use, sexual activity, relationships, and smoking. When boys and girls were compared with the

same risk behaviors of moderate substance use and sexual activity, girls consistently had more depressive symptoms than boys; the recommendation was made that girls who engage in high-risk behaviors, even at the experimental level, should be screened for depression (Waller, et al., 2006). This seems to be specifically the case for sexual activity. The association between sexual activity, sexual risk behavior, and depression symptomology in females is especially strong. Of the reviewed studies that addressed sexual activity and sexual risk behavior in adolescence, all noted that higher levels of depressive symptoms were found in females that engaged in greater sexual risk behavior activity, but it was unknown if prior histories of depression could have potentially contributed to this behavior or not (Rubin, Gold, & Primack, 2009; Seeley, Stice, & Rohde, 2009; Khan et al., 2009; ACPM, 2011; Waller et al., 2006). For example, Waller et al. (2006) found that every risk behavior among females increased the risk for depression symptoms in adolescence.

The need for emotional permanence and security seems especially relevant since young women appear to be more strongly influenced by rejection and perceived instability in their relationships (Grant et al., 2006; Seeley, Stice, & Rohde, 2009). This perception would logically increase the risk for an adolescent trajectory for depression into adulthood (Yaroslavsky et al., 2013). Although negative perceptions in the area of interpersonal relationships affected both genders, they found that girls were affected differently, which supports the ACPM's (2011) recommended guideline for adolescent depression. Having a tendency to ruminate on negative inferences from a traumatic event, or just making negative inferences in general, was positively related to depressive symptoms in adolescent girls, especially in the areas of achievement and appearance (Rood et al., 2012; ACPM, 2011).

Internal Factors

Depression in youth has unique characteristics: specific negative thoughts that are generally self-defeating, and a lack of positive thoughts. The social information-processing (SIP) model helps providers to understand how depression and anxiety relate to negative cognitions, particularly those cognitions that relate to negative outcome expectations or negative appraisals of behaviors and situations. The SIP model also helps illustrate the tendency of depressed youth to "sitting in the problem" instead of finding solutions to solve it (Luebbe, Bell, Allwood, Swenson, & Early, 2010). This "sitting in the problem" is not necessarily rumination but more of an inertia that can be related to the fear of failing, comfort with being in a victim mentality, distrust of self and others, or an overall fear of a negative outcome. This negative perception of self and the world can lead to feelings of isolation, either self-imposed or otherwise, which can lead to deviant peer influences (discussed in the first theme). Understanding this model in relation to adolescents is important to identify the potential "red flags" when assessing for the presence of any psychiatric condition.

A sense of powerlessness, feeling like a failure, insecurity, and feelings of helplessness nurture a negative outlook and perception of a teen's life, leading to a pessimistic sense of self both internally and externally. Taking credit for a personal success becomes very difficult as it is attributed to "blind luck." Self-reported low levels of coping, feelings of loneliness, and interpersonal dependency have been reported at higher percentages for those individuals who screen positive for depression (Yaroslavsky et al., 2013), as well as increased irritability and anger (Hagan, Shaw, & Duncan, 2008; Dumont, & Olson, 2012). Luebbe, Bell, Allwood, Swenson, and Early (2010) noted that not only were anxiety and depression related to a more negative information processing style, but depression alone was related to a lower positive style

as well (a positive style is the ability to perceive the environment and self in a more optimistic view). As noted previously, negative cognitions are positively related to depressive symptoms, and this phenomenon is notably reported more frequently in females. Negative processing of social information and perspective is also apparent with other externalizing symptoms such as obesity, sedentary behavior, and unhealthy sleep hygiene (Rockhill et al., 2013; Carli et al., 2014; ACPM, 2011).

Discussion

Based upon this review of the literature the mental health domains on risk screening instruments, which includes depression, anxiety, self-harm, and suicidal ideation/behaviors, does not stand alone in alerting the clinician to the need for further depression screening in adolescents. Tobacco use, alcohol/drug use, violence, adolescent stress, obesity, sexual promiscuity, and the lack of protective factors (such as peer influence, school connectedness, supportive adult relationship) are additional domains that need to be considered when evaluating for the presence of depressive symptoms in this population. Although each article in this literature review was not of high quality, they clearly linked adolescent characteristics and/or behaviors with depressive symptoms. While the same behaviors and/or characteristics were not studied across all of the articles, they did collectively focus on the traits that are very prominent in the teenage years.

Due to the high numbers of adolescents who suffer from depressive symptoms—without the benefit of any treatment—taking a few moments to thoroughly evaluate the domains on risk screens in a larger context may benefit many adolescents by alerting the clinician to the need for further assessment and/or treatment; this is the ultimate goal. Most importantly, the results of risk screening behaviors must be interpreted with a more discerning eye than is currently seen in

practice. This is essential when teens engage in high-risk sexual activity, particularly in females, who report problematic or dysfunctional family/social relationships, and/or are unable to identify positive qualities about self. Family discord, problems with a boyfriend or girlfriend, or school-related problems have been reported as a few of the more common reasons for adolescent suicide in the age group of 13 to 17 (Kennebeck, & Bonin, 2015). Also, because depression is not identical in presentation as adults, providers need to pay close attention to the uncommon symptoms of depression in youth: school problems, boredom, emotional sensitivity, frequent unexplained physical illness complaints, inability to concentrate, irritability, self-harming behaviors, and sleep disturbances (ACPM, 2011; Maurer, 2012).

The purpose of this literature review was to examine some of the variables associated with the development of depression in adolescents or its clinical course in relation to CDC (2013) recommended risk behavior domains on risk screening tools. Ideally, studies included in this paper would all be based upon the use of consistent risk behavior screening instruments however; studies on factors contributing to depression in adolescents were also included. Two other risk behavior-screening instruments besides the RAAPS were recommended by MQIC (2013): the Adolescent Health Review (AHR,) and Bright Futures (Patient Health Questionnaire for Adolescents [PHQ-A], 1999) but research studies with those tools in relation to depression identification were not found. In the absence of more studies from which to infer, the studies evaluated in this literature review primarily point out the areas that can be potential indicators in risk behavior screening. The rationale for this review was the premise that depressive symptoms in youth may be linked to several risk factors that are not seen in adults such as family, gender, school environment, and internal factors, and identification of these factors could aid clinicians in conducting a more comprehensive assessment. Future research should examine and evaluate

other risk behavior screening tools for similar outcomes with the tools recommended by USPSTF.

Unfortunately, the lack of consistency in screening instruments and methods used in the studies for this literature review create a limitation as well as the inability to show causality between the variables and outcomes. The designs of the majority of the studies were not of high quality, although several showed good reliability and validity. Lack of randomization, inconsistent demographics, samples, and settings hindered the generalizability of the results. Only one study had any longitudinal data recorded, and that was of a 24 month time period. Further research should be focused on the use of consistent screening instruments within similar settings, samples, and long-term follow-up. Several areas of research could include an emphasis on gender as a mediating variable since gender was a significant factor in the outcome of several studies. Other recommendations for future research should examine the differences and frequencies in positive results on the domains of risk behavior screening with the influence of race, socioeconomic status, gender, and legal guardianship of the adolescent; is there correlation between these factors and a positive screen for depressive symptoms? Lastly, primary care providers need to consistently and diligently follow guidelines with regard to screening practices for their particular setting. If only a portion of providers actually screen as suggested, the gap for identifying these vulnerable adolescents will remain no matter what screening instrument is used.

Conclusion

In lieu of adolescent depression specific screening, risk behavior screening may be a more viable option in the primary care setting; it can alert the provider to an overall elevated risk assessment that leads to further screening. When the depression specific domains on risk screens do not elicit a positive result the provider should take into consideration other domains showing

positive results to evaluate for the potential presence of adolescent depression. The CDC (2013) recommends using risk behavior screening tools with the inclusion of domains that are the leading causes of adolescent morbidity and mortality: unintentional injuries/violence; mental health; tobacco use; alcohol and other drugs; sexual behaviors contributing to unintended pregnancy, STIs and HIV; dietary behaviors; physical activity; and protective factors (MQIC & AHRQ, 2013). The recommended risk screening instruments contain these domains and are a reliable and valid measure for adolescent risk assessments. Guidelines regarding the interpretation of the screening results, as it relates to potential adolescent depression, should be developed so that adolescents needing further evaluation do not fall through the cracks in terms of receiving adequate treatment for depression.

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Adolescent Risk Behaviors, Screening, and Referral at an Adolescent Health Clinic:

A Retrospective Review

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Introduction

Researchers estimate that the prevalence of youth depression in the primary care setting is as high as 28% (American College of Preventive Medicine [ACPM], 2011). Statistics in a 2009 report from the National Research Council (NRC) and the Institute of Medicine (IOM) noted that the point prevalence of mental, emotional, and/or behavioral disorders among youth ages 12 to 17 is estimated at 14-20%, and symptoms may start to appear two to four years prior to the disorder being fully recognized. The NRC also reported that mental health problems started by age 14 in half of all cases, with the lifetime prevalence upwards of 20%. The National Strategy for Suicide Prevention (2012) stated that for students in grades 9 to 12, almost 16% seriously considered suicide and 7.8% of students had attempted suicide at least once in the prior 12 months; 60% of adolescent depression sufferers reported having suicidal thoughts with 30% actually attempting suicide.

Mental illness in youth has significant consequences for the health care system, particularly related to financing care. For example, the average cost of an adolescent inpatient care stay with a primary diagnosis of an affective disorder, particularly, was $13,397 per stay; total charges for 67,404 reported stays (admissions) equated to $903 million dollars for 2006 (the most recent data reported) (O'Connell, Boat, Warner, 2009). In addition, adolescents with depression experience multiple negative outcomes that can be life-long. The most significant cost of adolescent depression to society is the personal suffering from mental health problems due to increased morbidity that extends from psychological suffering (substance abuse, physical health consequences, lost occupational productivity) and decreased health-related quality of life. In the United States, depression and alcohol abuse are reported to be part of the top five causes of premature death and disability (Michaud et al., 2006). In addition, adolescent depression has

a negative effect on the health and well-being of family members and significant others such as parental/caregiver loss of employment because of the unpredictability and stress from having a child suffering from mental illness, or the decreased attention and focus to the needs of other family members due to so much energy consumed by a sick child (Busch & Barry, 2007). Benefits to earlier diagnosis and treatment include reduced future medical costs; reduced expenditures for social and educational programs subsequent to reduced drug abuse, costs associated with involvement in the judicial and legal systems, and losses from student dropout rates.

Risk behavior screening can increase the likelihood of identifying youth with depression in a primary care setting. The need for reliable evidence on outcomes resulting from risk assessments, and consequent early detection and treatment of depression is imperative to improve quality of life and reduce treatment costs. The purpose of this paper is to describe findings from a study that investigated patterns of risk behavior screening in an adolescent health clinic and discuss implications of the findings for Psychiatric-Mental Health Advanced Practice Registered Nurses (PMH-APRN) with Doctor of Nursing Practice (DNP) degrees.

Background

Since 2009, the US Preventive Services Task Force (USPSTF) has recommended screening for adolescent depression in primary care. However, the proportion of depression screening has been below recommended rates, perhaps due to time constraints in the primary care setting. (USPSTF, 2009; Irwin, Adams, Park, & Newacheck, 2009).

In addition to the issue of time constraints, depression screening has been suboptimal for identification of depression in adolescents in primary care due to the use of depression screening tools that assess symptoms commonly seen in depressed adults, rather than behaviors linked to

depression specifically in the adolescent population. Assessing for the presence of behaviors that are considered dangerous for an adolescent's health and well-being is not only informative regarding overall health status but may reveal the potential need for further mental health assessment and/or treatment. The Centers for Disease Control and Prevention (CDC, 2010) has identified the leading risk behaviors for morbidity and mortality in adolescents and recommended evidence-based risk assessments for these behaviors, or domains, in the primary care setting. These include unintentional injuries/violence, mental health, tobacco use, alcohol and other drugs, sexual behaviors contributing to unintended pregnancy, STIs and HIV; dietary behaviors, physical activity. In addition, a number of protective factors have also been identified as important to assess, including strong social support systems, acknowledging good qualities about self and having future goals, and/or a positive and trusting relationship with an adult (Michigan Quality Improvement Consortium [MQIC], 2013).

Adolescents who engage in risky behaviors are vulnerable to problems with current and future mental health issues such as major depression, substance use, or other psychiatric disorders, unintended pregnancy, poor school performance, and/or diminished social functioning. In addition, adolescents who experience depression have higher rates of engaging in these risk behaviors compared to adolescents without depression, thus increasing the risk for further mental illness into adulthood (Institute of Medicine [IOM] and National Research Council Committee on the Science of Adolescence, 2011; Waller et al., 2006). Since 2013, the MQIC and the Agency for Healthcare Research and Quality (AHRQ) have recommended that risk behavior screening be conducted at least annually with a validated screening instrument. Currently, a lack of systematic evidence-based guidelines for the use of risk assessment screening instruments for providers in the identification of potential depression in adolescents exists. However, evidence-

based studies have identified risk behaviors described by the CDC that are associated with the increased risk for depression (IOM, 2011; Forman & Davies, 2003; Haarasilta, Marttunen, Kaprio, & Aro, 2004; Richmond, Mermelstein, & Metzer, 2012).

Study Overview

The purpose of this retrospective chart review was to investigate provider patterns of risk behavior screening among adolescents who receive treatment at an adolescent health clinic in an urban setting in a south-central state of the US. The following research questions were explored:

1. Do providers adhere to national guideline recommendations for risk behavior screening of adolescents in a primary care setting?
2. What are the patterns of provider screening for depression screening using the PARS among adolescents in the clinic?
3. What are the patterns of behaviors and risk level among adolescent patients treated at the clinic?

The study procedures were approved by the Medical Institutional Review Board at the sponsoring university. Procedures to protect subject confidentiality were followed throughout the duration of the study. No data/names of physicians or providers were examined, extracted, or recorded. All data were de-identified prior to being recorded on the data extraction form and were not able to be traced back to the original medical record. All protected health information reviewed was not printed or recorded.

Methods

Sample. The sampling frame consisted of 605 medical records of patients seen at the clinic between March 1, 2014 and March 31, 2014. Records from this sampling frame were randomly selected (using Randomizer.org) and reviewed for eligibility in the study. A total of

150 records were reviewed to obtain the final sample size of 84; sample size was based upon the number of variables examined with an over-allowance of four medical records included in the event of conflict or exclusion during review.

Inclusion and exclusion criteria. Inclusion criteria included all adolescents, regardless of race, ethnicity, or gender between 12 and 18 years of age at the time of the clinic visit; patients seen for any reason during normal operational hours between March 1, 2014 and March 31, 2014 were eligible for inclusion. Exclusion criteria included adolescents with severe intellectual disability as documented in the medical record, non-English speaking adolescents, patients seen primarily in the rheumatology clinic, and patients seen as add-ons for sick visits or blood draws.

Setting. The study was conducted in a primary adolescent health services clinic located in an urban area of a south-central state of the US. Clinic staff includes social workers, nutritionists, psychologists, physicians, and nurses who provided a broad range of services. Services include specialty programs in obesity medicine and a Young Parents Program. The clinic also provided treatment for chronic illness, reproductive care, nutrition counseling, physical exams for school, sexual abuse evaluation and treatment, substance abuse services, and behavioral problems counseling. The operating hours of the clinic were from 9AM to 8PM Monday through Thursday and 9AM to 4PM on Friday. An average of 750 patients were seen every month. The records for the sample in this study were comprised of paper medical records. The clinic utilizes the Perkins Adolescent Risk Screen (PARS) for risk behavior assessments (Appendix A); a 17-item questionnaire, administered by the provider, that assesses for risk and protective factors and includes all CDC recommended risk areas. Patients are to be screened no less than annually at visits to the clinic per the MQIC (2013) recommendation.

Data collection. Medical records were reviewed for 1) date of service, 2) age, 3) gender, 4) race/ethnicity, 5) last education grade completed at time of visit, 6) who patient legally resides with 7) reason for visit, 8) documented PARS in chart, 9) risk level assessed for each domain on PARS, 10) documentation of provider referral and reasons, and 11) prior documented history of depression and/or anxiety. All data were extracted from each medical record by the principle investigator using a demographic collection form (see Appendix B) and study variables data extraction form (Appendix C).

Analysis. Rate of overall provider screening for risk behaviors using the PARS screening instrument was calculated based upon the presence of the most recent PARS in the chart. Descriptive frequencies were initially calculated to assess for differences in the screening practices of providers based upon completeness of the PARS. Fisher's exact test was performed to measure the differences in provider screening assessment patterns by gender and race (screened and/or not screened). Five risk behavior domains on the PARS were chosen to investigate: Sexual Activity, Drug Use, Family Relationships and Responsibility, Friends and Recreation, and School. Significance in risk behavior and risk level was computed for gender using Mann-Whitney U; for race and with whom the patient lives using Kruskal-Wallis Test. Data were analyzed using the SPSS software, version 22.

Findings

Patient Population

The mean age of the 84 adolescents was 15 (SD = 1.7). Patient visits were made up of 61 females (72.6%) and 23 males. Caucasians made up 52.4% of patients, 33.3% were African American, 7.1% were of mixed race, and other/unknown was 7.2%. Generally the last grade completed was 12th grade (25%), which coincides with the age of the patients. The adolescents

generally lived in either a one-parent household (41.7%) or two-parent household (31%). Out of the 84 clinic visit dates reviewed, 21 visits (25%) were due to a psychiatric-related complaint. A history of mental health treatment prior to the reviewed PARS screening was present in 33.3% of adolescents; females accounted for 26.2% of prior psychiatric treatment and males 7.1%. Seventeen adolescents (20%) were referred for further assessment and/or treatment on the date of the PARS screening (percentage based upon 84 charts); 15 females and two males, the majority were referred to the dietician for high BMI or to mental health providers for depression and/or anxiety symptoms or for behavior problems. The age range of those patients screened was 12 years for the youngest and 18 years at the oldest. The mean age for the most recent screening was 15 years and the mean age at data collection was 17 years (demographics, Table D1).

Screening

Out of the 84 charts reviewed for this study, 7 of the charts (8.3%) did not have a screening instrument in the chart, did not have documentation that a screening had been performed, or had a completely blank screening PARS sheet in the chart. The provider rate for annual screening for risk behaviors (according to the recommended guidelines) in this clinic was approximately 33.3% of the time; screening was performed within 1-2 years of the prior screening 44% of the time; and the rate for screening that was over 2 years from the prior screening was 22.7% of the time. Results showed that nearly a quarter of the patients reviewed were not being screened within a 2-year time period, and the longest time interval between a PARS screening was 6 years; several charts were found to have 4 and 5 years between screenings. Less the seven charts without any screen, only the domain of "Tobacco use" had a 100% completion rate; the domain "Good qualities and future plans" was the least completed (left blank) at 30% (Table D2, completion percent). There was not normal distribution for any of

the statistical results. Following chi-square analysis there was no significant association between the variable race and the presence of a PARS screening in the chart and at least partially filled out (n=80; p= .67) and/or if a referral was made (n=79; p= .30), and with whom the patient lives with, the presence of a PARS in the chart (n=82; p= .28), and/or if a referral was made (n=81; p= .934); Fisher's exact test did not find significant association between gender and presence of a PARS in the chart (n=84; p= .67) or if referral was made (n=83; p= .13) (Table D3). Complete counts for all risk behavior domains on the PARS stratified by gender are present in Table D4.

Characteristic of Patient Outcomes

Mann-Whitney U tests revealed no significant differences ($p < .05$) in the risk level with School Issues of males (n=20) and females (n=52), U=463.5, z= -.958, p= .34; Friends/Fun of males (n=20) and females (n=50), U=474, z= -.557, p= .577; Family of males (n=21) and females (51), U=493.5, z= -.832, p= .41; Drug use of males (n=22) and females (n=54), U=583.5, z= -.190, p= .849; and Sexual Activity of males (n=21) and females (n=49), U=439, z= -1.241, p= .215 (median scores across genders and variables = 1.00). Kruskal-Wallis Test revealed a statistically significant difference between the variable Sexual Activity across the three races (Caucasian, n=37; African American, n=24; Other, n=6), chi-square (2, n=67) = 6.37, p = 0.41; mean rank showed that African Americans had the highest Sexual Activity risk level scores compared with Caucasians and Other races (medium scores across all races and variables = 1.00) (Table 1).

Table 1

Mean Rank Between Domains and Variables of Gender and Race

	Sex	**N**	**Mean Rank**	**Significance (p < .05)**
	Male	20	39.33	
School Issues	Female	52	35.41	
	Total	72		.338
	Male	20	34.20	
Friends/Fun	Female	50	36.02	
	Total	70		.577
	Male	21	34.50	
Family	Female	51	37.32	
	Total	72		.405
	Male	22	38.02	
Drug Use	Female	54	38.69	
	Total	76		.849
	Male	21	31.90	
Sexual Activity	Female	49	37.04	
	Total	70		.215

	Race	**N**	**Mean Rank**	**Significance (p < .05)**
	Caucasian	38	33.53	
School Issues	AA	24	37.00	
	Other	7	36.14	
	Total	69		.651
	Caucasian	37	30.59	
Sexual Activity	AA	24	40.13	
	Other	6	30.50	
	Total	67		.041
	Caucasian	40	37.45	
Drug Use	AA	26	37.65	
	Other	7	32.00	
	Total	73		.546
	Caucasian	37	34.93	
Family	AA	25	35.20	
	Other	7	34.64	
	Total	69		.993
	Caucasian	36	36.47	
Friends/Fun	AA	24	30.38	
	Other	7	33.71	
	Total	67		.158

When comparison of mean scores of the five risk behaviors using a Mann-Whitney U Test was made between males and females, although no significant results were found, females were found to have higher risk scores compared with males for all the risk variables except within the variable "School issues," in which males were higher. African American females reported the highest proportion of risky sexual behavior levels compared with males and other ethnicities.

Discussion

The primary finding of this review was that provider screening practices varied without any pattern of bias; overall completion rate was poor (Table D2). The presence of a fully documented PARS in the chart was not shown to be related to, influenced or affected by gender, race, age, or any other demographic data that were collected. The majority of the risk behavior screenings (>60%) did not take place annually, as was the recommended time frame; for several adolescents screening had not taken place in over 3 years. Only one risk behavior domain ("Tobacco use") was filled out with 100% completion (minus the seven charts that did not have any part filled out or was not in the chart). Overall, many of the risk behavior domains on the 77 PARS that were in the charts were left blank. Due to so many incomplete risk behaviors domains, it is difficult to accurately identify relationships between variables. It would be interesting to understand why providers filled out only certain risk factor domains over other domains.

In addition to wide variation in screening patterns, it was noted that African American (AA) females have higher rates of elevated risk levels in the area of sexual activity. Studies have reported that when boys and girls were compared with the same risk behaviors of moderate substance use and sexual activity, girls consistently had more depressive symptoms than boys;

the recommendation was made that girls who act out in risk behaviors, even at the experimental level, should be screened for depression (Waller et al., 2006). This seems to be specifically the case for sexual activity. The association between sexual activity and sexual risk behavior and depression symptomology in females is especially strong. Of the reviewed studies that addressed sexual activity and sexual risk behavior in adolescence, all of them noted that higher levels of depressive symptoms were found in females that engaged in greater levels of risky sexual behavior; it was unknown if prior histories of depression existed that may have contributed to this behavior (Rubin, Gold, & Primack, 2009; Seeley, Stice, & Rohde, 2009; Khan et al., 2009; ACPM, 2011; Waller et al., 2006). Being female and African American was associated with elevated sexual risk behaviors and is an area of needed research for the PMH-APRN to explore in his/her practice and use the findings as an opportunity to better serve this population.

One-third of the patients in this study had a prior history of mental health problems, a particular variable that was not specifically studied with this review. The PMH-APRN can and should be especially vigilant for depressive symptoms in these patients, as a previous history of mood disorder have been shown to increase the risk for developing depression later in life (American Foundation for Suicide Prevention, 2013).

Preventative visits provide the perfect opportunity for APRNs to assess the patient's overall sense of well-being, including the psychosocial well-being. Advance Practice Nurses (from all specialty areas) are the principle health care contacts for a large majority of patients with mental illness (Young, Miller, & Khan, 2010), and they need to be skillful at identifying depression in adolescents as well as open to "different" symptoms of depression. This means utilizing a team-based approach with the PMH-APRN collaborating with other healthcare professionals who are involved in the patient's care, as well as directing members of the team to

the most up-to-date evidence-based information pertaining to identification of mental illness in this patient population.

Limitations

The major limitation for this review is the lack of ability to generalize study results to the general population of patients who were not seen at a health clinic. The sample size was small considering the number of charts reviewed and that the sample was taken from a health clinic in a large teaching hospital. Because this hospital is a primary resource for Medicaid patients, many of the charts included Medicaid. To have a broader population included in a review, information would need to be gathered in different areas of the country where the sample population may have more varied demographic characteristics. In addition, the rate of completion for provider adolescent screening utilizing the PARS was very low and the provider, not the patient, administered the screening tool. This could mean that results were biased. Different providers prioritize risk behaviors at varying levels of importance in relation to the adolescent's health and may not be based upon the priorities the adolescent feels are important for health and well-being. Furthermore, providers were not interviewed to elicit information regarding screening practices and general thoughts on screening using the PARS for the presence of high-risk behaviors, especially those behaviors potentially masking depressive symptomology and the barriers to screening.

Implications for Practice

The American Association of Colleges of Nursing [AACN] (2004) has explicated several core competencies for Advanced Practice Nurses who hold Doctor of Nursing Practice (DNP) Degrees. These DNP competencies, or essentials, include a focus on advanced practice nursing, population health, clinical scholarship, interprofessional collaboration, policy, and organizational

and systems leadership. These competencies provide direction for PMH-NPs with DNP degrees to improve clinical practice and optimize outcomes for adolescents at risk for depression. First and foremost, screening is an integral aspect of the assessment of the adolescent in primary care, for the purpose of identifying and treating a major depressive disorder. Improving the services provided to patients is the main goal of this Capstone. For the potential barrier of time, strategies, which focus on increasing the time-effectiveness of screening, might include incorporating a brief screening instrument to be completed by the adolescent in the waiting area such as the PHQ-2. The PARS is a 17-item questionnaire to be filled out during the health visit, but it can be time-consuming due to the length and amount of information it asks to obtain. To this regard, the doctoral-prepared PMH-NP could contemplate making short-term follow-up appointments for adolescents who present with psychiatric complaints and/or a positive risk behavior screen on one or more domains, especially the domains that relate to adolescent depression and anxiety.

Findings are also relevant for population health. For example, strategies to promote awareness of depressive symptoms in this population and decrease the stigma are warranted; the general public needs to be aware that the depressive symptoms in a young person rarely appear the same as in an adult. The DNP prepared PMH-APRN is well-suited to go into schools, both public and private, to promote information regarding depression symptoms and screening and distribute educational materials in areas students may or hold workshops.

Clinical scholarship can be advanced with further research related to elevated risk behaviors and the relationships they have on depressive symptomology and diagnosis among adolescent depression. Additional domain areas need to be included or could replace other domains when assessing for depression and other mental health issues in order to stay current.

These new domains may include hours spent watching TV, playing video games, or texting; measuring BMI/nutrition with kind of food being consumed. Other important health behavior measures include how many hours are spent alone and family history of mental health issues. The demographic variables of race and gender should be considered as well and possibly separated using different screening methods; males and females screened with different screening instruments. Other areas to consider for future research would be to explore the relationships between adolescents who are referred due to an elevated high-risk behavior profile, reason for referral, and the effect of successful/unsuccessful treatment interventions.

PMH-NPs with DNP degrees can engage in clinical scholarship in collaborative efforts with other disciplines. Outcomes research conducted in collaboration with primary care allows the PMH-APRN with a DNP degree can assess these screening practices and help them to evolve and become more accurate, less time consuming, and improve overall clinical practice services to this patient population.

This retrospective review mimics findings of other studies in manuscript 2, in that adolescent depression and risk behavior screening are at suboptimal levels in primary care. Patient-centered care is the current model for patient care and incorporating behavioral health is a natural integrative component and a priority to address service quality, service cost, and service availability. The PMH-APRNs with a DNP degree are poised to lead this integrative progression. The adolescent health clinic for this project has a fairly reliable and reciprocal relationship with their behavioral health colleagues (per medical record reviews for this study). The concern surrounds the screening process, which includes: the provider actually using the screening tools per the specific clinic and completing it, minimizing provider bias and interpretation on the screening domains, and identifying other areas of the assessment screening

that may be relevant to adolescent depression. In the primary care clinic, the DNP prepared PMH-APRN is ready to assist in creating policy and procedures for this clinic regarding adolescent depression screening. Part of this process would include properly training the primary care providers in mental health skills as well as ongoing consultation to help them diagnose and/or manage adolescents with basic mental and behavioral health issues. T

The PMH-APRN with a DNP can construct this training program that would consist of skills to better communicate with parents and/or teachers, use of screening measures, listening for the hidden "red flags" in the information given by the adolescents, and focusing on somatic complaints by the patient. The program would also require annual retraining to ensure that the most up-to-date evidence-based interventions were being disseminated throughout the clinic. Outcome measures would be collected in provider fidelity with screening, provider comfort with mental health care in adolescent patients, follow-up tracking of depressive symptoms in the adolescent, family feedback, and the effect on numbers of adolescents identified with depression and successfully treated by the primary care provider. The program created and implemented by the PMH-APRN with a DNP can be a blueprint for other clinic areas, including primary pediatric health and other settings of the clinic such as satellite offices.

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Capstone Report Conclusion

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Conclusion

As described in the first manuscript, adolescents are being prescribed antipsychotic medications at an alarming rate for a multitude of reasons—behavior problems being one of the top reasons, even among children 2-5 years of age. It can be reasonably assumed that these medications may have far reaching consequences on the physical and mental health of a young person. Many behavior problems that youth are being treated for with antipsychotic medications are also used to treat other mental health problems such as depression and anxiety. Unfortunately, many clinicians may be unaware that some of these behavior problems could have other causes and may actually stem from depression. While limited research exists evaluating the risk behavior variables identified by the CDC (2012) and their influence on the presence or absence of depression, enough research has been completed to support a more exhaustive inquiry into certain risky behaviors, such as smoking or drug use, when assessing an adolescent. The holistic approach to patient care that is inherent in nursing is a core component of Advanced Practice Nursing; this holistic base is the foundation of the exhaustive inquiry that is needed to accomplish a more thorough assessment of these patients. Since 2009, the US Preventive Services Task Force (USPSTF) has recommended screening adolescents (age 12 to 18 years) for depression when systems for diagnosis, treatment, and follow-up are in place.

The second manuscript explored adolescent risk behaviors in relation to the presence and/or development of adolescent depression. This focused primarily on those behaviors not normally associated with the existence of depression, at least not in an adult. Many symptoms are constant between adults and youth, but many are not. Youth "act-out" in risky behaviors much of the time when psychopathology is present. For example, common behaviors include risky sexual behaviors, anger and aggression, and increased conflict with family. This is

partially due to the adolescent continued brain development, hormonal fluctuations, and the sense of social and personal identity that is ill defined at this particular time in a person's life. This makes it all the more a priority to correctly identify mental health areas that need to be addressed and treated, if indicated. All of the developmental components of this population create an uncertain and unpredictable future, and the path of this future is fluid, at least to a certain extent. It is imperative not to provide suboptimal care; this would be a disservice to their future.

The final manuscript described results of a descriptive study examining risk behavior screening practices using the PARS risk behavior assessment at an adolescent primary care health clinic in the southeastern United States. Several questionable practices related to provider fidelity in screening were identified. The most pressing concern involved the lack of consistent screening overall, across all genders, races, ages, and patient presentation. Lack of completeness of the screening instrument was consistent. Strategies that focus on increasing clinician fidelity and consistency regarding depression screening among adolescents have been proposed.

Recommendations for improving screening rates in institutions included incorporating a brief screening instrument in the waiting area for the patient to fill out prior to being called back for examination; increasing public and private school awareness with literature and expert speakers; follow-up appointments for a patient with any elevated risk behavior scores, even if not in the domain of depression; the addition of other domains on risk screening instruments; and various research areas to further identify relationships between risk behaviors and depression.

Significant challenges exist in terms of creating and defining regulations, guidelines, best practice recommendations, and policy regarding depression screening in the adolescent population. In the first manuscript one of the challenges found was related to the use of

alternative treatments over medication (alternative in this context to mean some form of psychotherapy or non-medication treatment). Some of these challenges are associated with provider reimbursement, lack of dissemination of research outcomes into practice, and obstacles introduced from families. Part of the training and expertise rooted in a DNP program is the ability to shape policy and practice on many levels. For the particular example of using alternative treatments prior to medication in young people, a DNP prepared nurse can help to generate changes within communities in regards to this issue, such as taking the lead in creating local programs with a primary purpose to offer psychotherapy to young people at a maximally reduced cost and that is easily accessible. Monitoring outcome data from this venture as supportive indicators can help a DNP nurse continue to advocate for changes within the insurance systems, within federally funded programs, and ultimately to policymakers in order to decrease the challenges associated with other treatments over medications as a first-line option.

If access to care is a problem due to lack of providers, the DNP clinician can also work toward finding avenues that will increase provider availability. Again, this can be done through policy change or through grass roots efforts in a particular region. Incorporating the input and support from other disciplines affected by having insufficient numbers of clinicians to provide treatment/care for patients can also contribute strength for change in conjunction with the DNP. Much of the responsibility of care in areas underserved by mental health falls on the primary care provider. Therefore, these providers, along with social workers, clinical psychologists, state child welfare offices, and others can contribute vital clinical insights when seeking solutions to this issue. Healthcare is shifting to more of a community-based approach, which means that the healthcare "team" approach will be the standard model. The DNP PMH-APRN has the

preparation to lead these teams into the most optimal, patient-centered care design that will successfully help the patient achieve their highest level of health.

All of the suggestions for future research in these manuscripts are areas in which the DNP PMH-APRN has a large investment at stake. Many DNP PMH-APRNs are at the forefront of patient care, ensuring the most recent evidence-based information is being accurately reflected in practice. But they also advance the evidence-base related to best practices. Best practice guidelines and recommendation are non-existent without the monitoring and dissemination of accurate information generated from well-designed research. In practice, the DNP provider collects and records the pertinent data from patient interactions, analyzing it for areas of potential improvement or change, researching for existing information that has addressed this particular area, recognizes if a need exists for further investigation, and seeks alternatives to solve the clinical problem.

DEPARTMENT OF PEDIATRICS, KENTUCKY CLINIC
UNIVERSITY OF KENTUCKY
CHANDLER MEDICAL CENTER, LEXINGTON, KY
PERKINS' ADOLESCENT RISK SCREEN (PARS)

(Pretraining suggested.)

If patient is High Risk, circle right column; if Low Risk, circle left column.
If undecided, circle center column.

	Low Risk	Moderate Risk	High Risk
Body Mass Index	Between 15-85% (Normal weight/height per the growth chart	Between 5-15%/85-95% (Just over or just under the normal range)	<5%/>95% (Much over or much under normal weight)
Weight perception	Feels good about weight	Feels "fat" even though weight is normal on the chart	Skips meals, vomits, takes medicine, or exercises too much to control weight
Nutrition	Eats 3 meals/day; and eats fruits, vegetables, and foods with fiber	Eats less than 3 meals/day; or vegetarian without milk or eggs	Eats a lot of snacks with fat and sugar; eats few regular meals
Exercise	5 times/week for at least 20 min each, with increased heart rate and sweating	Exercises less than 5 times/week, not strenuously	No regular exercise to increase heart rate
Tobacco use	No smoke or chew	Smoke or chew less than daily; or stopped less than 6 weeks ago	Smoke or chew regularly
Drug use	Never used	Previously used; not in the past 3 months	Recently used or currently uses marijuana, huffing, LSD, cocaine, heroin, etc.
Alcohol use	Has only tasted it, or used for religious purpose	Social only, not more than once/week; less than 3 beers or 2 liquor drinks at a time	Drunkenness, blackouts; drinking interferes w/school, family, etc.; 4 or more drinks at a time
Sexual activity	Never; or is married and faithful	Not in last 6 months; safe sex with condoms	Sex without regular use of condoms; first intercourse before age 16
School	B/C average or better; steady improvement in grades	Grades slipping; detention problem	Failing grades; suspension; often skips school
Depression	Usually happy	Often feels discouraged or down; cries a lot	Unhappy most of the time; feels hopeless; thoughts of suicide
Abuse	No physical or sexual abuse	Abuse reported and counseling received	Abuse still occurring or not treated with counseling
Safety	Uses seat belt/helmet; never rides with drunk driver	Usually uses seat belt/helmet; rarely rides with drunk driver	Does not use seat belt/helmet; has driven drunk; sometimes rides with drunk driver
Violence	No fights, no threats; does not carry a knife, gun, or rifle; no legal troubles	Threatens others; previous illegal acts (stealing, etc.) but not in past 3 months	Damages own or others' property; carries a gun, knife, or rifle; physical fights with peers; has had contact with police
Family relationships and Responsibility	Gets along with family; completes chores or work duties	Often argues with family; does not complete chores or work duties	Physical and/or intense verbal fights with family
Friends and Recreation	Has male and female friends; involved in clubs, activities, or hobbies	Has few friends; does things alone; has friends who often get into trouble	Has no friends; or belongs to gang or cult
Good qualities and Future plans	Can name 3 good qualities about self; has plans for the future	Hard to think of good qualities about self; has few interests; does not have future plans	No good qualities about self; no interests or activities
Immunizations	second MMR; tetanus within ten years; hepatitis series; had varicella or been vaccinated	lack any one item	lack two or more items

Main Diagnosis: _____

High risk: _____

Moderate risk:

Date: _____

Low risk: _____

Appendix B
Demographic Collection Form

Date of Review:	Date of Service:
Medical Record Screening ID #:	Medical Record Assigned ID #:
Age:	Male ☐ Female ☐
Race/Ethnicity:	County of Residence:
Last Education Grade Completed:	Lives Primarily With (1-parent, 2-parent, 3-gparent, 4-other family member, 5-other)
Reason for Visit:	Diagnosis:

Appendix C
Data Extraction Form

Domains on PARS	PARS included in chart	Risk level assessed	Referral ordered
BMI			
Weight perception			
Nutrition			
Exercise			
Tobacco use			
Drug use			
Alcohol use			
Sexual activity			
School			
Depression			
Abuse			
Safety			
Violence			
Family relationships and Responsibility			
Friends and Recreation			
Good qualities and Future plans			
Immunizations			

PARS in chart: 1 = yes; 2 = no
Risk Level: 0 = N/A; 1 = Low risk; 2 = moderate risk; 3 = High risk
Referral: 0 = N/A; 1 = yes; 2 = no

Appendix D

Table D1

Demographic Frequencies of Patient, N = 84

	N	%	Mean	SD
Age				
At most recent screening			15.00	1.7
At study visit			17.00	1.7
Mean time interval between			2.00	1.2
% of charts with at least partially completed PARS				
Gender			1.73	0.45
Male, %	23	27.4		
Female, %	61	72.6		
Race			1.55	0.68
White	44	52.4		
Black	28	33.3		
Other	12	14.3		
Last Grade Completed			8.58	4.1
12	21	25.0		
11	14	16.7		
10	15	17.9		
9	12	14.3		
8	2	2.4		
7	5	6.0		
6	1	1.2		
Unknown	14	16.7		
Lives with			2.14	1.47
One Parent	35	41.7		
Two Parent	26	31.0		
Grandparent	5	6.0		
Other Family Member	2	2.4		
Unknown	2	2.4		
Past MH Treatment			1.64	0.52
Males—Yes	6	7.1		
Males—No	17	20.2		
Females—Yes	22	26.2		
Females—No	38	45.2		
Referral at Time of Screen			1.80	0.41
Yes	18	21.4		
No	66	78.6		

Table D2

PARS Risk Behavior Domains Completion (assessed for low, moderate, or high risk)[*]

% Complete	**% / N**
Tobacco Use	100% / 77
Drug Use	99% / 76
Alcohol Use	95% / 73
Abuse	95% / 73
School	94% / 72
Safety	94% / 72
Violence	94% / 72
Family Relations/Responsibility	94% / 72
Sexual Activity	91% / 70
Depression	91% / 70
Friends and Recreation	91% / 70
Nutrition	88% / 68
Exercise	88% / 68
BMI	78% / 60
Weight Perception	75% / 58
Good Qualities and Future Plans	74% / 57
Immunizations	47% / 36

*Less the seven charts without a PARS

Table D3

Variables and Association With PARS Performed and/or Referral Made

	Screened			Referral		
	Yes	No	Sig ($p < .05$)	Yes	No	Sig ($p < .05$)
Gender			FET .668			FET .133
Male	22	1		2	21	
Female	55	6		15	45	
Lives With			.281			.934
1 Parent	31	4		8	27	
2 Parent	24	2		5	20	
Other	21	0		4	17	
Race			.666			.300
Caucasian	40	4		10	33	
African American	26	2		5	23	
Other	8	0		0	8	

Table D4

Risk Behavior Domain Counts

PARS Item	Low		Moderate		High		Total
	n	%	n	%	n	%	
BMI	34	57[a]	10	17	16	27	60
Males	10		3		6		
Females	24		7		10		
Weight Perception	48	83	5	8	5	8	58
Males	14		2		0		
Females	34		3		5		
Nutrition	40	59	17	25	11	16	68
Males	12		4		5		
Females	28		13		6		
Exercise	19	28	27	40	22	32	68
Males	7		7		6		
Females	12		20		16		
Tobacco use	69	90	7	9	1	1	77
Males	20		2		0		
Females	49		5		1		
Drug use	64	84	9	12	3	4	76
Males	19		1		2		

Females	45		8		1		
Alcohol use	60	82	11	15	2	3	73
Males	18		2		0		
Females	42		9		2		
Sexual Activity	51	73	11	16	8	11	70
Males	17		4		0		
Females	34		7		8		
School	55	76	12	17	5	7	72
Males	14		3		3		
Females	41		9		2		
Depression	48	69	14	20	8	11	70
Males	14		4		3		
Females	34		10		5		
Abuse	61	84	11	15	1	1	73
Males	17		3		0		
Females	44		8		1		
Safety	66	92	6	8	0	0	72
Males	18		2		0		
Females	48		4		0		
Violence	68	94	2	3	2	3	72
Males	18		1		2		
Females	50		1		0		
Family relationships	61	85	7	9	4	6	72
Males	19		1		1		
Females	42		6		3		
Friends/recreation	60	86	9	13	1	1	70
Males	18		1		1		
Females	42		8		0		
Good qualities/future plans	50	88	4	7	3	5	57
Males	14		1		2		
Females	36		3		1		

*Immunization Domain on PARS not included as the focus was on adolescent behaviors.

**Figures based upon review of 84 medical records.

a Percentages may not be 100% accurate due to rounding; percentage was calculated based upon completed domains.

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